

University Occupational Health and Safety Guidance Note

UNDERTAKING A RADIATION RISK ASSESSMENT

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1. PURPOSE

The aim of this Guidance Note is to provide basic guidance for those who are responsible undertaking a suitable and sufficient Radiation Risk Assessment (RRA), and for those who have management responsibility for work activities involving radiation.

An RRA is a legal requirement that must be implemented to ensure that all steps have been taken to prevent the potential for exposures to ionising radiation are as far as is reasonably practicable, and where it is not possible to prevent these entirely, that any doses received are reduced to ALARP.

Completing the RRA will allow the responsible person to determine the hazards associated with the work being done, and how they will comply with the requirements of the IRR17.

2. RESPONSIBILITIES

Refer to the OHS Ionising Radiation Standard for detailed roles and responsibilities in connection to working with ionising radiation.

Creation of the RRA is the responsibility of the PI / Laboratory Supervisor / Line Manager responsible for the work.

3. RADIATION RISK ASSESSMENT

The aim of an RRA is to make a comprehensive assessment of a particular work activity which could potentially expose personnel to ionising radiation, and to identify the appropriate control measures to be put in place to reduce any potential doses received when carrying out the work to as low as reasonably practicable (ALARP).

All work which will make use of any source of ionising radiation must be accompanied by a suitable and sufficient RRA, which must be completed prior to work commencing.

All RRAs must be completed using the [Radiation Risk Assessments Form](#) and must be reference in the general risk assessment that accompanies the work activity.

3.1 Radiation Risk Assessment Process

An RRA for the particular work activity involving ionising radiation must be approved before the work commences.

When the responsible person has completed the RRA, this must be submitted to the DRPS for initial review. If the DRPS is satisfied with the content, the RRA is to be sent to the URPO for review and initial comments. This will allow the URPO to review the assessment, and help address any points that might need correction.

Where the assessment has been reviewed by the URPO, and there are no additional comments, the RRA will be passed to the URPA for review.

Where the URPA has additional comments, these will be passed back to the responsible person for review and amendment.

Where the URPA has no further comments, they will return the RRA to the URPO with confirmation that they are satisfied that the RRA is suitable and sufficient. This confirmation will be passed on to the responsible person and the work may begin, provided all other safety and departmental requirements for the work have been completed and the work has been approved locally (see OHS Ionising Radiation Standard for further details).

A copy of the RRA will be kept by the URPO for record keeping, archival and auditing purposes.

3.2 Radiation Risk Assessment Contents

When completing a radiation risk assessment, there are a number of details that must be captured to comply with IIR17 (Regulation 8). The following must be considered when completing the RRA:

- The nature of the sources of ionising radiation to be used, or likely to be present, including the potential presence of radon gas;
- The extent of unrestricted access to working areas where dose rates or contamination levels are likely to be significant;
- The estimated radiation dose rates to which anyone can be exposed;
- The likelihood of contamination arising and being spread;
- The estimated levels of airborne and surface contamination likely to be encountered;
- the results of any previous personal dosimetry or area monitoring relevant to the proposed work;
- The effectiveness and the suitability of personal protective equipment (PPE) to be provided;
- Advice from the manufacturer or supplier of equipment about its safe use and maintenance;
- Engineering control measures and design features already in place, or planned;
- The consequences of possible failures of control measures – such as electrical interlocks, ventilation systems and warning devices – or systems of work;
- Any planned systems of work;
- Possible accident situations, their likelihood and potential severity;
- Steps to prevent identified accidents, or limit their consequences (see Section 3.4).

3.3 Radiation Risk Assessment Review

Risk assessments must be regularly reviewed to ensure that they are up to date, and that they still accurately reflect the work that is being carried out. All RRAs must be reviewed regularly, with the periodicity being commensurate with the level of risk presented by the work, and not more than annually. The frequency of reviews must be discussed with the URPA.

As well as being regularly reviewed, all RRAs must be reviewed where there is a significant change to either the work itself or external factors which will impact on the work. Such factors are not limited to, but can include:

- A change in the source of radiation, such as:
 - A decreased or increased activity
 - The form of the source (Unsealed sources where only sealed sources are in use)
- Where electrically generated x-rays are used, a change in:
 - The generator or target material
 - The energy levels generated
- Any changes to safety processes or equipment:
 - PPE
 - Shielding
 - Engineered controls or other safety features
- Any changes to the work method such as the Introduction of new processes
- Any human factors which can impact on the work:
 - Altered worker capability
 - Where a worker declares they are pregnant

This list is not exhaustive. Where there is any doubt over the potential suitability or applicability, the responsible person must ensure that the risk assessment is appropriately reviewed.

3.4 Radiation Risk Assessment Accidents

A key requirement of the RRA is the identification of any reasonably foreseeable accident scenarios. These are any instances where, in the event of a failure or administrative process or engineering safe guard, there is the need to act to prevent or reduce the exposure of any person, either associated with the work or not. Such reasonably foreseeable accident scenarios include:

- The potential loss or theft of a radioactive source or generator from the University premises.
- The potential unplanned exposure of a person to radiation outside of the scope of the planned work.
- Unplanned overrun of sources, whether there is the risk of contaminating a person or not.

Where a potential accident scenario has been identified, the RRA must detail all reasonably practicable controls measures that are to be put in place to prevent it from occurring and to reduce the severity of any exposure.

When considering potential accident scenarios, do not just consider the potential outcomes following failure of equipment, but also the potential for the failure of systems of work or of unauthorised activity or behaviour.

The level of detail to be included in the assessment with regards to a given accident scenario is to be commensurate with both the likelihood and severity of the accident scenario. Where the assessment shows that the accident scenario is extremely unlikely, or that the level of impact is trivial, then the level of detail should reflect this. As part of the above, an assessment must be made of any doses that may be accrued during a given accident scenario. This will assist in determining both the severity of the potential accident scenario and with selecting appropriate dosimetry.